

# PATENT SPECIFICATION

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## (54) CONTROLLING CROTCH ODOURS

(71) We, THE PROCTER & GAMBLE COMPANY, a Corporation organised and existing under the laws of the State of Ohio, United States of America, of 301 East Sixth Street, Cincinnati, Ohio 45202, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

Interview studies have indicated that some women are bothered by the emission of odor from their crotch region and particularly by the emission of vaginal odors which may be particularly noticeable during menstruation but which may be present at other times. A variety of measures have been suggested to control these odors, by the use of douches and by the use of deodorizing compounds applied, either internally or externally, to the body tissues or contained within tampons or sanitary pads for deodorizing body secretions themselves or preventing their breakdown or conversion to form odorous gas molecules. It has also been suggested to mask such odors, as by the use of perfumes, or the like.

Each of such previously suggested methods and means for odor control in the crotch region, however, requires either tampering with the normal body chemistry, as by douching or the application of deodorizing substances directly to bodily tissues, or the presence of an absorbent pad structure for absorbing body secretions and providing a chemical reaction with the absorbed secretions within the absorbent body while preventing normal ventilation of the crotch region. Masking the odors with perfumes, or the like, has other obvious disadvantages. Moreover, as has also been recognized, odors may be present at times other than menstruation and with the excep-

tion of the direct application of deodorizing compounds to the highly sensitive bodily tissues in the crotch region, whose presence could lead to further chemical imbalance and the continued production of objectionable odors, such nonmenstrual period odors have not heretofore been subject to control.

Bearing in mind the foregoing, it is a primary object of the present invention to provide novel means for and methods of control of crotch odors without the direct application of chemical substances to bodily tissues while permitting ventilation of the crotch region.

According to the invention, such a result is achieved by applying an odor absorbent compound to a fabric having a substantially uniform air permeability of at least 100 cubic feet per square foot per minute at 1/2 inch H<sub>2</sub>O pressure drop and suspending such fabric across the woman's crotch region to permit ventilation thereof while absorbing odors from the ventilating air.

A nether garment in accordance with the invention comprises a crotch panel consisting of a fabric having a substantially uniform air permeability of at least 100 cubic feet per square foot per minute at 1/2 inch H<sub>2</sub>O pressure drop, the panel having an odor absorbent compound applied thereto, together with hip encircling garment support structure for suspending said crotch panel across a woman's crotch region to permit ventilation thereof while absorbing odors from the ventilating air.

The odor absorbing compound preferably comprises a water soluble carbonate or bicarbonate applied to the fabric in an aqueous solution and subsequently dried. This may comprise an add-on deposit between 5% and 20%, e.g. 10% by weight of the fabric. The resultant crotch panel enables ventilation of the wearer's crotch region while adsorbing acidic and basic

odorous molecules from the ventilating air.

The crotch structure may be made of one or a plurality of layers. Preferably the porosity is achieved by many small passages through the structure rather than through a few larger holes as may be typical of apertured non-woven fabrics. The cotton tricot knits commonly used to make women's panties exemplify the kind of porosity desired.

Preferably the crotch structure comprises absorbent cellulosic fibers and may, for example, comprise a cotton knit cloth or a rayon non-woven fabric with a basis weight ranging from 50 grams per square meter to 200 grams per square meter.

Polyamine compounds, for example, those derived from ethylenimine also provide a suitable adsorbent coating for use in the present invention.

In a garment in accordance with the present invention, the crotch panel coated with the odor adsorbent agent may be applied as a separate layer overlying the conventional crotch panel or may be utilized as the sole crotch structure.

As pointed out above, the crotch structure in a garment according to the present invention is permeable to air and treated with a material which adsorbs and eliminates the crotch odors from the air passing through it, thus providing an easy and effective means of control without any of the disadvantages of the prior art deodorants, douches or deodorizing absorbent pads and tampons.

#### WHAT WE CLAIM IS:—

1. A method of controlling odors commonly produced in a woman's crotch region, while enabling ventilation thereof, comprising applying an odor absorbent compound to a fabric having a substantially uniform air permeability of at least 100 cubic feet per square foot per minute at 1/2 inch H<sub>2</sub>O pressure drop and suspending such fabric across the woman's crotch region to permit ventilation thereof while absorbing odors from the ventilating air.

2. A method according to claim 1 wherein said fabric comprises cellulosic fibres.

3. A method according to either one of claims 1 and 2 wherein said fabric is selected from the group consisting of cotton and rayon cloths having a basis weight ranging from 50 to 200 grams per square meter.

4. A method according to any one of claims 1 to 3 wherein said odor absorbent compound comprises a water soluble carbonate or bicarbonate applied to the fabric in an aqueous solution, and subsequently dried.

5. A method according to claim 4 wherein the carbonate or bicarbonate comprises an add-on deposit equal to between

5% and 20% of the weight of the fabric.

6. A method defined according to claim 5 wherein the carbonate or bicarbonate comprises about 10% by weight added on the fabric.

7. A method according to any one of claims 4 to 6 wherein the odor adsorbent compound is either sodium bicarbonate or potassium bicarbonate.

8. A method according to any one of claims 1 to 3 wherein said odor absorbing compound comprises a polyamine compound derived from ethylenimine.

9. A method according to any preceding claim further comprising affixing such treated fabric in the crotch portion of a nether garment.

10. A nether garment comprising a crotch panel consisting of a fabric having a substantially uniform air permeability of at least 100 cubic feet per square foot per minute at 1/2 inch H<sub>2</sub>O pressure drop, the panel having an odor absorbent compound applied thereto, together with hip encircling garment support structure for suspending said crotch panel across a woman's crotch region to permit ventilation thereof while absorbing odors from the ventilating air.

11. A garment according to claim 10 wherein said fabric comprises cellulosic fibers.

12. A garment according to claim 11 wherein said fabric is selected from the group consisting of cotton and rayon cloths having a basis weight ranging from 50 to 200 grams per square meter.

13. A garment according to any one of claims 10 to 12 wherein said odor absorbent compound comprises a water soluble carbonate or bicarbonate, applied to the fabric in an aqueous solution and subsequently dried.

14. A garment according to claim 13 wherein the carbonate or bicarbonate comprises an add-on deposit equal to between 5% and 20% of the weight of the fabric.

15. A garment according to claim 14 wherein carbonate or bicarbonate comprises 10% by weight added on the fabric.

16. A garment according to any one of claims 13 to 15 wherein the odor absorbent compound is either sodium bicarbonate or potassium bicarbonate.

17. A garment according to any one of claims 10 to 12 wherein said odor absorbing compound comprises a polyamine compound derived from ethylenimine.

18. A garment according to claim 10 substantially as described.

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